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AUTHOR Packard, Richard D.; Dereshiwsky, Mary I.
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ABSTRACT

In 1985, Arizona initiated a 5-year pilot test of the Career Ladder Teacher Incentive and Development Program. The program provided alternate avenues for teachers to advance other than by accumulating years of experience and college credits. Data were collected annually through the Career Ladder Perception Assessment Scale Survey, which evaluated the program in terms of recruiting, retaining and motivating high-quality teachers who impact positively on student achievement. Results of a series of factor analyses incorporated into nine tables present data as follows: (1) Summary Statistics: Principal Factor Method; (2) Factor 1: Program Reform and Accountability; (3) Factor 2: Communication and Emotional Health; (4) Factor 3: Evaluation and Placement; (5) Factor 4: Psychological Self-Actualization; (6) Factor 5: Peer Evaluation; (7) Factor 6: Program Support; (8) Factor 7: Teacher Input and Advancement Opportunities; and (9) Cronbach's Alpha Values for Seven Extracted Factors. Seventy references, a series of legislative reports and publications related to the project, and a copy of the Career Ladder Perception Assessment Scale Survey complete the document. (LL)

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VALIDITY OF KEY FACTORS WITHIN THE ASSESSMENT INSTRUMENTATION USED FOR THE EVALUATION OF THE ARIZONA CAREER LADDERS PROGRAM

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

by:

Dr. Richard D. Packard
& Dr. Mary I. Dereshiwsky,
Professors of Educational Research & Leadership
P. O. Box 5774
Northern Arizona University
Flagstaff, Arizona 86011
Ph: (602) 523-5852

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Validity of Key Factors Within the Assessment Instrumentation Used for the Evaluation of the Arizona Career Ladders Program

Overview

In 1985, Arizona initiated the five-year pilot test of the Career Ladder Teacher Incentive and Development Program. This program provided alternate avenues for teachers to advance other than solely by accumulating years of experience and college credits. Arizona's program was unique regarding its explicit recognition of local diversity. Participating districts were granted considerable autonomy regarding how they developed their local career ladder plans and requirements.

The pilot project resulted in documented gains in student academic achievement, teacher performance and district readiness levels (Packard and Dereshiwsky, 1989, November 3; Brandt, 1990). As a result, the Arizona State Legislature has extended funding for the program beyond the pilot test period. Additionally, the program is expanding in scope; a phase-in of additional applicant-districts has been approved.

Evaluation and Policy Research

Evaluation and policy research are methodologies which follow the scientific approach to knowledge, and they usually focus on a problem of assessing the impact of some organizational program or governmental policy. Program developers in education and government have recently been reaping the benefits of applying these techniques to determine the value of programs in meeting intent or purposes. "Performance analysis" has been applied for some time in the areas of business and manufacturing, but only recently have governments and educational agencies adopted similar systematic techniques of demonstrating objective evidence for accountability. In the past, most social or governmental programs were continued on the basis of special interest groups, power politics, or some type or level of authority; but little information was available with which to make sound decisions based on objective data.

In 1984, Arizona was fortunate to have a legislature who did not follow the procedures used by other states who were on the reform movement bandwagon related to "career ladders" programs. Unlike most other states, a key aspect of the Arizona legislation was to provide an outside evaluator to assess the worth of the program in recruiting, retaining and motivating high-quality teachers who could make a difference in

student learning and development (or achievement). The Center for Excellence in Education, at Northern Arizona University in Flagstaff, was selected to provide the research and reports to the State Legislature and Career Ladder Task Force over the five-(5) year pilot-test Arizona Career Ladder Evaluation Project (S.B. 1521, 1985).

In addition to the legislative reports, a series of published research papers resulted from the long-range pilot-test program. Please see a listing of these reports and publications in the reference section of this document (Packard, Dereshiwsky, Bierlein and others, 1985-1992).

Study Design and Procedures

The Joint Legislative Committee on Career Ladders required that the project be evaluated. Data were collected annually using an instrument entitled the Career Ladder Perception Assessment Scale (CLPAS) Survey (Packard, Bierlein, Aleamoni and Healmstadter, 1986). This questionnaire (See Exhibit A for a copy of the questionnaire) consisted of 53 Likert-scaled items (strongly disagree to strongly agree, with a not-applicable option) in the following areas:

1. general Career Ladder concepts;
2. staff development concepts;
3. teacher evaluation concepts;
4. peer evaluation concepts;
5. Career Ladder placement concepts;
6. organizational climate.

The paper presents the results of a series of factor analyses conducted on the preceding concept areas (subscales) of the CLPAS. The analysis was accomplished using the principal factor method of factor extraction (Dillon & Goldstein, 1984; Tabachnik & Fidell, 1989. Kim & Mueller (1978) have also provided a succinct description of factor analysis procedures in one of the Sage series documents.). Extracted factors were then subjected to varimax rotation.

The database consists of the 1989-90 responses to this survey. Subjects were selected using a probability proportional to size (PPS) random sample stratified by participating district. A total of 2,880 usable (at least partially completed) responses were received.

Results

Table 1 (p. 3) presents the factor-analytic results. The related seven (7) factorial constructs are as follows: (1) Program Reform and Accountability; (2) Communication

and Emotional Health; (3) Evaluation and Placement; (4) Psychological Self-Actualization, (5) Peer Evaluation; (6) Program Support Factors, and (7) Teacher Input and Advancement Opportunities.

As shown in Table 1, four factors had eigenvalues greater than or equal to 1.00. These factors accounted for 59.1% of the total variance. In addition, the factor solution extracted a significant amount of covariance, as evidenced by the application of Bartlett's test of sphericity (14,953.74; p-value=0.00). The KMO index of sampling adequacy was 0.97, also indicative of a robust factor solution.

Table 1.

Summary Statistics: Principal Factor Method

Factor	Eigenvalue	Percent of Variance Extracted	Cumulative Percent of Variance Extracted
Program Reform and Accountability	25.986	49.0	49.0
Communication and Emotional Health	2.807	5.3	54.3
Evaluation and Placement	1.467	2.8	57.1
Psychological Self-Actualization	1.077	2.0	59.1
Peer Evaluation	0.770	1.5	60.6
Program Support	0.718	1.4	62.0
Teacher Input and Advancement Opportunities	0.590	1.1	63.1

Bartlett's Test of Sphericity:	14,953.74
Significance:	0.00
KMO Index of Sampling Adequacy:	0.97

Tables 2 through 8 (pgs. 4 - 8) contain the survey items which loaded significantly (loadings of 0.50 or greater in absolute value) on each of the seven extracted factors. A brief interpretation of each factor will be provided along with the corresponding table.

Table 2 (p. 4) depicts key items which relate to the "program reform and accountability" factor. Concepts which were of central importance to the national reform movement loaded to a significant degree. These factors included: (1) focus on improved instruction and student outcomes performance, (2) recruitment, retention and motivation of high-quality teachers, (3) favorable time/benefit ratio, (4) cooperative interpersonal relationships, and (5) challenging criteria and clarity of performance goals.

Table 2.

Factor 1: Program Reform and Accountability

Survey Item Number	Item Content	Factor Loading
GEN16	Improved instruction	0.810
GEN17	Student progress improved	0.806
GEN15	Competent teachers retained	0.793
GEN14	Competent teachers recruited	0.781
GEN19	Improved teacher morale	0.740
GEN20	Improved perceived professional status	0.729
GEN22	Intrinsic rewards available	0.720
TEV32	Time spent is worth benefits gained	0.642
GEN18	Teacher cooperation encouraged	0.635
TEV34	Student outcomes reflect performance	0.550
TEV33	Proper emphasis placed on achievement	0.523
CLP44	Challenging CLP criteria	0.523
CLP47	Outside advancement opportunities	0.480
GEN23	Goals are clearly communicated	0.472
CLP53	Teachers have input into CLP revisions	0.470
PEV40	Staff cooperation is encouraged	0.460
CLP51	Top responsibilities are appropriate	0.456
CLP43	Can stay at same CLP level	0.452
CLP48	Teachers are involved in CLP development	0.443
TEV28	Performance goals are clearly defined	0.419

GEN: General Career Ladder Concepts;

CLP: Career Ladder Placement Concepts;

TEV: Teacher Evaluation Concepts;

PEV: Peer Evaluation Concepts.

Table 3 (p. 5) shows the importance of items related to the "communication and emotional health" factor. Key concepts included: (1) communication type and level, cooperation and social interrelationships and positive psychological/emotional feelings, (2) clarity of organizational goals, purpose, progress and criteria for advancement, and (3) importance of good leadership models.

Table 3.

Factor 2: Communication and Emotional Health

Survey Item Number	Item Content	Factor Loading
CLIM66	Communication level feels good	0.798
CLIM65	Strong social network	0.703
CLIM59	Cooperative work environment	0.634
CLIM64	Goals are clearly communicated	0.602
CLIM60	Good leadership models	0.600
CLIM61	Stress-free environment	0.501
CLIM58	Get feedback on progress	0.477
CLP42	Advancement criteria are understood	0.400

CLIM: Organizational Climate Concepts;

CLP: Career Ladder Placement Concepts.

Table 4 (p. 6) establishes the importance of "evaluation and placement" concepts. Those items include the following: (1) qualification, training and fairness of peer and administrative teacher evaluators, and (2) adequacy of support for teaching skill improvement.

Table 4.

Factor 3: Evaluation and Placement

Survey Item Number	Item Content	Factor Loading
STAFF26	Peer evaluators are well trained	0.663
PEV36	Well-trained evaluators	0.661
PEV35	Peer evaluators are chosen for top qualifications	0.571
STAFF25	Administrators are well trained	0.543
TEV29	Administrators evaluate fairly	0.542
TEV31	Evaluation time is sufficient	0.499
TEV30	Evaluation procedures are consistent	0.471
STAFF27	Adequate teacher skills resources	0.430

STAFF: Staff Development Concepts;

TEV: Teacher Evaluation Concepts;

PEV: Peer Evaluation Concepts.

Table 5 (p.6) depicts concepts related to "psychological/emotional self-actualization" as follows: (1) feelings of purpose, success, importance, security, belonging and cooperation, and (2) feelings of being rewarded for a job well done.

Table 5.

Factor 4: Psychological Self-Actualization

Survey Item Number	Item Content	Factor Loading
CLIM57	Work has clear purpose	0.785
CLIM55	Feel successful in job	0.748
CLIM62	Job function is important	0.524
CLIM54	Feel I belong	0.521
CLIM63	Feel secure in job status	0.520
CLIM56	Feel rewarded in job	0.477
CLIM59	Cooperative work environment	0.418

CLIM: Organizational Climate Concepts.

The remaining three extracted factors had eigenvalues of less than one (1) and accounted for 4.0% of the total variance. In addition, the final extracted factor (Table 8, p. 8) consisted of "redundant" items (e.g., survey questions that had already loaded on previously extracted factors). Tables 6, 7 and 8 (pgs. 7 - 8) show those factors as follows: (1) teacher program input, (2) evaluation system, (3) adequacy of support for materials development and inservice, and (4) placement and advancement opportunities.

Table 6.

Factor 5: Peer Evaluation

Survey Item Number	Item Content	Factor Loading
PEV37	Teachers have enough selection input	0.670
PEV38	Peer evaluation is formative	0.573
PEV40	Peer evaluation is summative	0.463

PEV: Peer Evaluation Concepts.

Table 7.

Factor 6: Program Support

Survey Item Number	Item Content	Factor Loading
CLP46	Adequate assistance with materials	0.589
CLP45	Evaluation materials standards exist	0.529
GEN23	Goals are clearly communicated	0.498
CLP42	Advancement criteria are understood	0.464
STAFF24	Adequate inservice received	0.408

GEN: General Career Ladder Concepts;

CLP: Career Ladder Placement Concepts;

STAFF: Staff Development Concepts.

Table 8.

Factor 7: Teacher Input and Advancement Opportunities

Survey Item Number	Item Content	Factor Loading
CLP48	Teachers are involved in CLP placement	0.454
CLP47	Outside advancement opportunities	0.405
CLP53	Teachers have input into CLP revisions	0.404

CLP: Career Ladder Placement Concepts.

As a final step, Cronbach's alpha reliability coefficients, along with per-item deletion values, were calculated for the individual survey items loading "highly" (loadings of 0.50 or greater in absolute value) within each factor. (Both the standardized and unstandardized values are shown; since the survey items were identically scaled, these should be equivalent except for rounding error.)

Table 9 (p. 8) displays these results. As can be seen from this table, the four factors with eigenvalues of 1.00 or greater also yielded Cronbach's alpha coefficients greater than or equal to 0.85. All of the seven extracted factors yielded Cronbach's alpha values above the "marginally acceptable" 0.60 value. In addition, the per-item deletion did not result in any notable improvement in calculated alpha values.

Table 9.

Cronbach's Alpha Values for Seven Extracted Factors

Factor	Cronbach's Alpha	Standardized Cronbach's Alpha
Program Reform and Accountability	0.9653	0.9650
Communication and Emotional Health	0.9028	0.9043
Evaluation and Placement	0.9303	0.9306
Psychological Self-Actualization	0.8596	0.8640
Peer Evaluation	0.6981	0.6986
Program Support Factors	0.8588	0.8589
Teacher Input and Advancement Opportunities	0.6984	0.6981

Cross-Validity to Related Policy

In conclusion, the initial survey instrumentation and related policy results of the career ladder programs in Arizona have been relatively positive and closely associated. In part, this is due to the use of systematic and objective evaluation research techniques which allowed decision makers to have relevant data with which to continue programs and refine legislation. There is a strong and direct relation between factors that loaded on the evaluation instrumentation and final components of legislation that supported the value or worth of this reform program. Therefore, the issue of validity of instrumentation is fairly well being borne out by both the factor-analytic (quantitative) and field-based historical (qualitative) results.

The program intent was, and still is, to recruit, retain, and motivate high-quality teachers and result in a positive impact on student achievement. Specific factors which significantly loaded, and are an important part of the restructuring presently going on with current career ladder programs, are as follows: (1) program reform for improved instruction and student outcomes performance, recruitment, retention and motivation of high-quality teachers, and positive time/benefits ratio; (2) communication factors related to a cooperative organizational climate, psychological environment, clarity of purpose, good leadership models, and support resources; (3) emotional health and psychological support factors of clear purpose, feelings of job importance, success, belonging, security, reinforcement (reward), and cooperative environment; (4) the importance of a formative and summative evaluation system; and (5) other program support factors which relate to teacher input and advancement opportunities.

The continuing refinement of each of the important components of the career ladder reform movement is an ongoing process. Beyond the original pilot-test districts, several new ones are being accepted, and legislation is in place to continue this process. It is a tribute to the state and schools to accept the risks and challenges which this type of reform, restructuring and systematic improvement requires each to face. From the researchers' observations, the process continues to be successful, and it is largely due to a continuing effort to provide decision makers with objective evaluation research evidence of accountability for attaining program goals.

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APPENDIX A

R. Packard, L. Bierlein, K. Kundin

PERCEPTION ASSESSMENT SCALE

Using the Rating Scale shown below, please circle the response which best describes the way you feel about the concept expressed by each statement. Please respond to each statement in relation to the Career Ladder Program in your specific district, not career ladder districts in general. Do not respond to items about which you may not have information.

Rating Scale

SA = Strongly Agree
MA = Moderately Agree
MD = Moderately Disagree
SD = Strongly Disagree
DNA = Does Not Apply

1. General Career Ladder Concepts:
   - 1.1 The Career Ladder Program (CLP) will help attract high quality people into the teaching profession . . . . . SA MA MD SD DNA
   - 1.2 The Career Ladder Program (CLP) will help retain the most competent teachers in the classroom . . . . . SA MA MD SD DNA
   - 1.3 The Career Ladder Program (CLP) will help improve instruction . . . . . SA MA MD SD DNA
   - 1.4 The Career Ladder Program (CLP) will help improve student academic progress. . . . . SA MA MD SD DNA
   - 1.5 The CLP encourages cooperation among teachers. . . . . SA MA MD SD DNA
   - 1.6 The CLP will lower teacher morale. . . . . SA MA MD SD DNA
   - 1.7 The CLP will improve the professional status of teachers in the eyes of the public. . . . . SA MA MD SD DNA
   - 1.8 The monetary rewards offered by the CLP are large enough of an incentive to cause teachers to apply for the program. . . . . SA MA MD SD DNA
   - 1.9 The intrinsic rewards (personal satisfaction) are enough of an incentive for teachers to apply for the program. . . . . SA MA MD SD DNA
   - 1.10 The district's career ladder goals and objectives have been clearly communicated to teachers. . . . . SA MA MD SD DNA
   - 1.11 The CLP includes a fair appeal process for disagreements over placement on the ladder. . . . . SA MA MD SD DNA
2. Staff Development and Training Concepts
   - 2.1 I have received adequate inservice on the CLP teacher evaluation system. . . . . SA MA MD SD DNA
   - 2.2 Peer trainers (staff development personnel) have been selected on the basis of their superior qualifications. . . . . SA MA MD SD DNA

2.3 Administrators are well trained in the CLP evaluation system. . . . . SA MA MD SD DNA

2.4 Credit earned in university courses should be one of the criteria for movement upward on the career ladder. . . . . SA MA MD SD DNA

2.5 The district provides adequate resources to help teachers gain the skills required for advancement on the ladder. . . . . SA MA MD SD DNA

3. Teacher Evaluation System Concepts

3.1 The evaluation instruments clearly define the various levels of teaching performance. . . . . SA MA MD SD DNA

3.2 Teachers feel that administrators evaluate teaching performance fairly for placement on the ladder. . . . . SA MA MD SD DNA

3.3 The CLP evaluation procedures are structured in such a manner to insure consistency among evaluators. . . . . SA MA MD SD DNA

3.4 The amount of time evaluators spend observing teachers is sufficient to ensure proper placements on the ladder. . . . . SA MA MD SD DNA

3.5 Time required for the CLP evaluation process is worth the benefits gained. . . . . SA MA MD SD DNA

4. Peer Evaluation Concepts

4.1 Peer evaluators have been selected on the basis of their superior qualifications. . . . . SA MA MD SD DNA

4.2 Peer evaluators are well trained in CLP evaluation procedures. . . . . SA MA MD SD DNA

4.3 Teachers have sufficient input in the selection of the peer evaluators involved in their evaluation. . . . . SA MA MD SD DNA

4.4 Peer evaluation is being used formatively (to assist teachers in the improvement of instruction). . . . . SA MA MD SD DNA

4.5 Peer evaluation is being used summatively (to make decisions about placement in the CLP). . . . . SA MA MD SD DNA

4.6 I believe that peer evaluation in my district hinders cooperative staff efforts. . . . . SA MA MD SD DNA

5. Career Ladder Placement Concepts

5.1 Teachers clearly understand what is expected of them in order to advance on the ladder. . . . . SA MA MD SD DNA

5.2 Teachers can feel comfortable about choosing to remain at the same level on the ladder. . . . . SA MA MD SD DNA

5.3 The criteria for career ladder levels are challenging enough

so that only the most competent teachers advance. . . . . .SA MA MD SD DNA

5.4 The CLP clearly specifies standards for judging the contents of material submitted for CLP evaluation (portfolio, growth plan, etc.) . . . . . .SA MA MD SD DNA

5.5 Adequate assistance is being provided to teachers regarding the development of materials submitted for CLP evaluation. . . . . SA MA MD SD DNA

5.6 Our CLP provides teachers with opportunities for continued advancement without leaving the classroom on a full-time basis. . . . . SA MA MD SD DNA

5.7 Teachers were adequately involved in the development of the district career ladder program. . . . . SA MA MD SD DNA

5.8 The positive effects of higher level responsibilities (teacher mentor, etc.) outweigh the possible disadvantages of being released part-time from classroom assignments. . . . . .SA MA MD SD DNA

5.9 Clear criteria for CLP participation have been established for personnel whose job description differs from a regular classroom teacher. . . . . .SA MA MD SD DNA

5.10 Higher level responsibilities in the CLP are appropriate assignments for those teachers selected for advancement. . . . . SA MA MD SD DNA

5.11 The district has an adequate number of trained personnel to effectively place candidates on the career ladder. . . . . SA MA MD SD DNA

5.12 The district has established a means for adequate teacher input concerning possible revisions. . . . . SA MA MD SD DNA

(Feel free to respond on the back of this sheet if more space is needed.)

A. Please describe the major strength/s of your district career ladder program.

B. Please describe the area/s of your career ladder program which need improvement.

6. Career Ladder District Climate Survey The following questions are designed to assess teacher perceptions of general organizational climate. (Teacher evaluators are asked to respond in relation to how you feel teachers will rate each item)

6.1 I am treated with respect . . . . . SA MA MD SD DNA

6.2 I have a feeling of belonging. . . . . .SA MA MD SD DNA

6.3 I have a feeling of being trusted. . . . . SA MA MD SD DNA

6.4 I have feelings of being successful in my job assignment. . . . . SA MA MD SD DNA

6.5 I am allowed to progress toward desired goals. . . . . SA MA MD SD DNA

6.6 I have a feeling of being rewarded for a job well done. . . . . SA MA MD SD DNA

6.7 I feel my work has a clear purpose. . . . . SA MA MD SD DNA

6.8 I feel my job has functional importance to the organization. . . . . SA MA MD SD DNA

6.9 I am consistently provided knowledge of progress. . . . . SA MA MD SD DNA

6.10 I feel I have ample options which provide hope for improvement. . . . . SA MA MD SD DNA

6.11 I am provided a cooperative working environment. . . . . SA MA MD SD DNA

6.12 I am not placed in unfair competitive situations with my peers. . . . . SA MA MD SD DNA

6.13 I am provided good leadership models. . . . . SA MA MD SD DNA

6.14 I feel I am given a range of tasks which are challenging. . . . . SA MA MD SD DNA

6.15 I feel my working area is pleasant. . . . . SA MA MD SD DNA

6.16 I work in an environment free from excessive stress. . . . . SA MA MD SD DNA

6.17 I feel free from fear in my work. . . . . SA MA MD SD DNA

6.18 Organizational goals are clearly communicated. . . . . SA MA MD SD DNA

6.20 I feel appreciated by the supervisors who evaluate me. . . . . SA MA MD SD DNA

6.21 I am treated as an adult. . . . . SA MA MD SD DNA

6.22 My peers are treated with respect. . . . . SA MA MD SD DNA

6.23 My peers have feelings of being trusted. . . . . SA MA MD SD DNA

6.24 My peers have feelings of being rewarded for a job well done . . . . . SA MA MD SD DNA

6.25 My peers are consistently provided knowledge of their progress. . . . . SA MA MD SD DNA

6.26 My peers feel free from fear in their workplace. . . . . SA MA MD SD DNA

C. My district's greatest strength/s in the area of general climate is/are:

D. My district's greatest need/s for improvement of general climate is/are:

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Organization: Northern Arizona University

Position: Prof. Ed. Leadership/Res

Address: PO Box 5774 NAU

Tel. No.: 602-523-5852

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